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SITE ASSESSMENT TECHNICAL ASSISTANCE

EPA CONTRACT 68-S5-3002

30 May 1996

Mr. Christopher Corbett (3HW22)
Remedial Project Manager
U.S. Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107

TDD No. 9605-45

Subject: Keystone Sanitation Site - Abbreviated Sampling Plan

Dear Mr. Corbett:

Enclosed is the Keystone Sanitation Site - Abbreviated Sampling Plan for Emergency Response. Please feel free to contact me at (215) 238-0338, Ext. 265 regarding this plan for the Residential Groundwater Sampling event.

Very truly yours,

ROY F. WESTON, INC.

Colleen Duffy
Colleen Duffy

Site Lead

Attachments

cc: TDD File

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

In Association with Foster Wheeler Environmental Corporation; Resource Applications, Inc.; C.C. Johnson & Malhotra, P.C.; and
PRC Environmental Management, Inc.

AR324294

ABBREVIATED SAMPLING PLAN FOR EMERGENCY RESPONSE

SITE NAME: KEYSTONE SANITATION Site TDD# 9605-45 PCS# 2461

SITE LOCATION: HANOVER Township, Adams County, PA

SITE OR FACILITY TYPE: LANDFILL

DATE: JAN 30, 1996 RSM OSC: Christopher Corbett

SATA PREPARER: Colleen Duffy QA REVIEWER: Marian Murphy

OBJECTIVE OF SAMPLING: High Concentrations found in residential groundwater, resampling for confirmation of levels.

NUMBER OF SAMPLES	MATRIX *	CONTAINER TYPE	PARAMETER **	PRESERVATIVE	QA/QC REQUESTEDG AND/OR SPECIAL DETECTION LIMIT
11	WATER	VOA VIA	VOA METHOD CLP SW 11092	HCl + ICE	
15	WATER	AMBER	SEMI VOA METHOD CLP SW 11092	ICE	
15	WATER	POLY	TOTAL METALS METHOD CLP SW 11092	HNO ₃ pH < 2	
15	WATER	POLY	CYANIDE METHOD CLP SW 11092	NaOH pH 7-12	

- * AQ=AQUEOUS, S=SOIL, SED=SEDIMENT, D=DRUM, T=TANK, V=VAT, W=WIPE, A=AIR
 ** DIS MET=DISSOLVED METALS, TOT MET=TOTAL METALS, VOA=VOLATILE ORGANICS, PP MET=PRIORITY POLLUTANT METALS, BNA=SEMIVOLATILE ORGANICS
 @ MS=MATRIX SPIKE, MSD=MATRIX SPIKE DUPLICATE, DUP=DUPLICATE, FB=FIELD BLANK, TB=TRIP BLANK, RB=RINSATE BLANK

SAMPLING METHODS: SATA SOP FOR RESIDENTIAL GROUNDWATER SAMPLING.

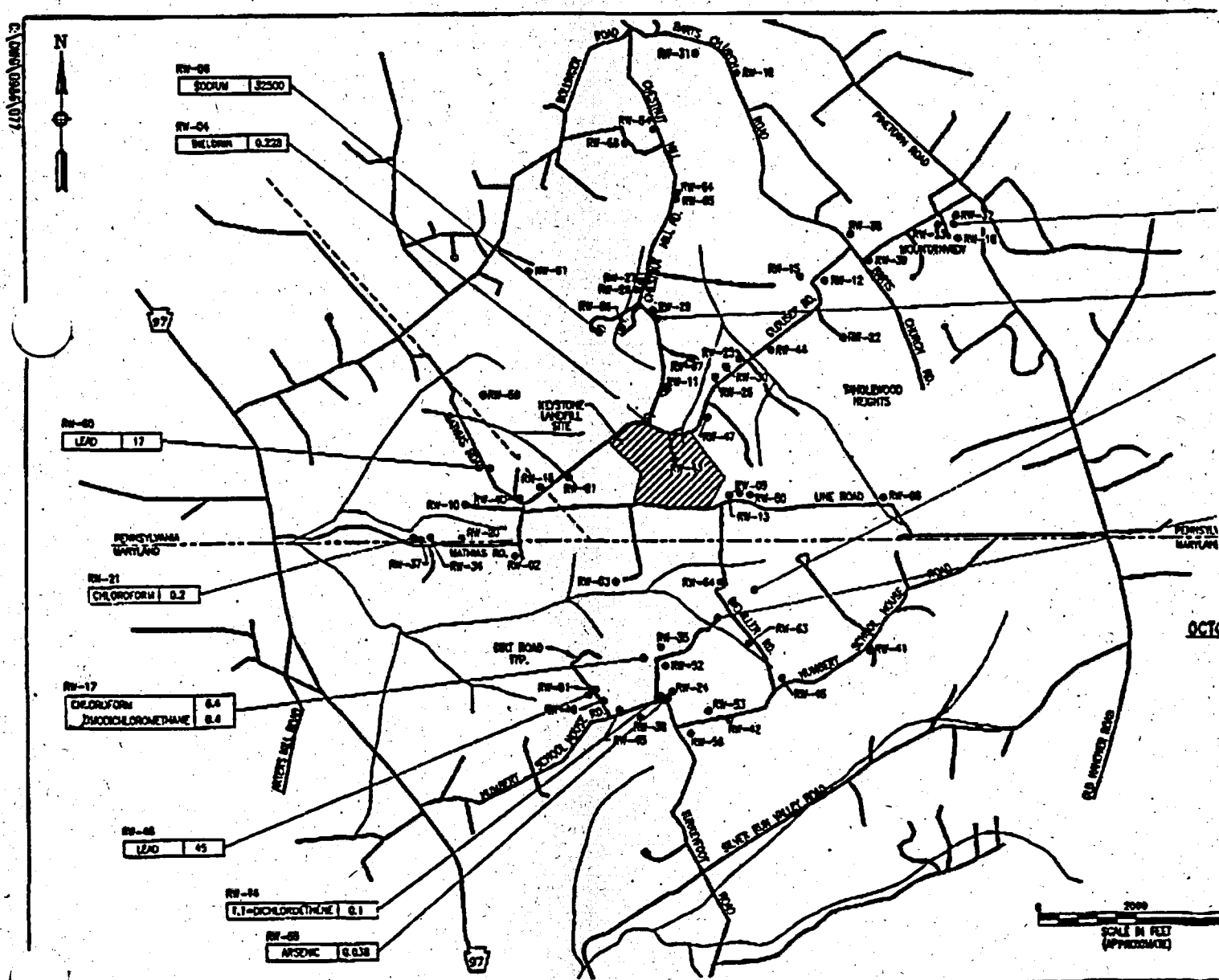
(SEE ATTACHED SHEETS)

DECONTAMINATION USED: WASTE DISPOSED AS DRY INDUSTRIAL WASTE.

PACKAGING: VERMICULITE & COULERS

ATTACHMENT: SAMPLING LOCATION MAP

AR324295



SAMPLING LOCATIONS MAP

TOTAL P. 11

AR 324 296

SOP 202

SITE ASSESSMENT TECHNICAL ASSISTANCE RESIDENTIAL GROUNDWATER SAMPLING STANDARD OPERATING PROCEDURE

1.0 INTRODUCTION

The following Standard Operating Procedure (SOP) has been prepared to assist Roy F. Weston, Inc. (WESTON•), Site Assessment Technical Assistance (SATA) members with a step-by-step guide and the recommended protocol for sampling residential groundwater

Ingestion or contact with hazardous chemicals introduced through potable water supplies is a great threat to the public. SATA members generally perform residential groundwater sampling for the following reasons:

- a. To determine the presence and magnitude of contamination;
- b. To delineate the extent of contamination; or
- c. To evaluate the effectiveness of in-place treatment systems.

Parameters most frequently sampled for are volatile organic compounds (VOCs), metals, base/neutral/acids (BNA), PCB/Pesticide compounds and cyanide compounds; therefore, these parameters are the focus of this SOP.

2.0 MATERIALS REQUIRED

2.1 VOC Sampling Materials

The following materials are required for collecting VOC samples:

- Sampling plan
- Maps
- Personal protective equipment (as specified in the Health and Safety Plan)
- 40 mL VOA vials with Teflon™ septums
- Cooler (size dependent on number of samples)
- Ice or blue ice for sample preservation
- Hydrochloric acid (HCl) solution for preserving VOC samples with BTEX compounds or to comply with Contract Laboratory Programs (CLP) laboratory requirements
- Sample labels/tags
- pH/temperature/conductivity meter
- Chain-of-Custody forms
- Paper towels
- Ziploc® bags or Whirl-Pacs®

- Plastic garbage bags
- Nitrile or latex sample gloves
- Shipping supplies (i.e., Federal Express labels, tape, etc.)

2.2 Metals Sampling Materials

The following materials are required to sample for metals in groundwater:

- 1 L polyethylene bottles
- Cooler (size dependent on number of samples)
- Ice or blue ice for sample preservation
- Sample labels and tags
- pH/temperature/conductivity meter
- Chain-of-Custody forms
- Paper towels
- Ziploc® bags or Whirl-Pacs®
- Plastic garbage bags
- Nitrile or latex sample gloves
- Shipping supplies (i.e., Federal Express labels, tape, etc.)
- Nitric Acid (HNO₃) solution (20%)

2.3 BNA Sampling Materials

The following materials are required for collecting BNA samples:

- 1 L amber bottles (provide enough bottles for a triple volume at each sampling location)
- Cooler (size dependent on number of samples)
- Ice or blue ice for sample preservation
- Sample labels/tags
- Ziploc® bags or Whirl-Pacs®
- Plastic garbage bags
- Nitrile or latex sample gloves
- pH/temperature/conductivity meter
- Chain-of-Custody forms
- Paper towels
- Shipping supplies (i.e., Federal Express labels, tape, etc.)

2.4 PCB/Pesticide Sampling Materials

The following materials are required for collecting PCB/pesticide samples:

- 1 L amber bottles (provide enough bottles for a triple volume at each sampling location)
- Cooler (size dependent on number of samples)

- Ice or blue ice for sample preservation
- Sample labels/tags
- pH/temperature/conductivity meter
- Chain-of-Custody forms
- Paper towels
- Ziploc® bags or Whirl-Pacs®
- Plastic garbage bags
- Nitrile or latex sample gloves
- Shipping supplies (i.e., Federal Express labels, tape, etc.)

2.5 Cyanide Sampling Materials

The following materials are required for collecting cyanide samples:

- 1 L polyethylene bottles
- Sodium Hydroxide (NaOH) solution (50%)
- Cooler (size dependent on number of samples)
- Ice or blue ice for sample preservation
- Sample labels/tags
- pH/temperature/conductivity meter
- Chain-of-Custody forms
- Paper towels
- Ziploc® bags or Whirl-Pacs®
- Plastic garbage bags
- Nitrile or latex sample gloves
- Shipping supplies (i.e., Federal Express labels, tape, etc.)

3.0 SAFETY PRECAUTIONS

Due to the levels and concentrations of contaminants normally found in groundwater, exposure to these chemicals does not usually present a threat to the sampler. Physical hazards, such as explosion, may exist. These threats may be present in outdoor well casings.

In addition, the following precautions are to be taken:

1. Record head space readings using an flame ionization detector (FID) or a combustible gas indicator (CGI).
2. Ventilate the head space to alleviate the aforementioned hazards.
3. Follow the procedures outlined in SATA SOP No. 201, Monitoring Well Sampling, if you are required to sample from the well casing.
4. Wear nitrile or latex gloves to prevent skin contact with water, as well as to lessen the chances of contaminating the samples with essential skin oils, etc.
5. Wear safety glasses or splash goggles when adding caustic or acid preservatives.

4.0 SAMPLING PROCEDURES

4.1 General Procedures

1. Present your credentials as an EPA contractor and answer any questions that you can with the exception of policy questions.
2. Politely, but firmly refer the resident to the On-Scene Coordinator (OSC) if the resident poses questions concerning policies or future actions at the site.
3. Locate sampling points within the home. These may vary depending on the type of sampling performed.
4. Purge the system for at least 15 minutes prior to performing any sampling. Approximately 75 gallons of water will cycle through the system, allowing a representative groundwater sample to be obtained.
5. Use the pH/temperature/conductivity meter to ensure that you have flushed the system and that you have introduced groundwater into the system. Normal groundwater temperatures should range from the low 50s to the mid 60s at the end of the purge period.
6. Obtain three readings of all parameters approximately 1 to 2 minutes apart. WESTON® meters are not temperature compensating; therefore, adjustments must be made to obtain accurate pH and conductivity readings.
7. Collect samples when you have obtained three consecutive parameter readings that are within 10% of each other.
8. Record all information in the site logbook. Notations must include all purge data, meter readings and sample times.
9. Use a unique repeatable designator to protect the resident's privacy when assigning sample identification designators. *Do not use the resident's name.* Where more than one volume is required at a sampling point, all samples will have the same designator.
10. Label all sample jars immediately at the collection site.
11. Wear fresh sample gloves when collecting water samples at each new sample location, even within the same home.

4.2 VOC Sampling Procedures

1. Wear sample gloves.
2. Place one drop of HCl in the vial if preservation is required.
3. Collect samples in the designated vials. A triple volume sample must be collected at each location. *Note: VOC samples should be collected without aeration devices in place and at the slowest possible flow.*
4. Fill the vial slowly until a convex meniscus is formed.
5. Add a small amount of the water to the cap.
6. Affix the cap to the vial.
7. Gently shake the vial uniformly distribute the preservative.
8. Turn the vial upside down and strike the vial sharply on the palm of the hand and observe for bubbles. (Bubbles can not be present in the sample.)

9. Dry the vial with a paper towel.
10. Label the vial immediately.
11. Collect field blank samples at the rate of 10% of the total number of samples collected per day. A minimum of one field blank sample must be collected.
12. Place the samples on ice as soon as possible and cool to 4° C (39° F).

4.3 Metals Sampling Procedures

1. Wear sample gloves.
2. Collect samples in the designated bottles leaving enough room in the bottle for the addition of the preservative.
3. Preserve the sample to a pH ≤ 2 by slowly adding HNO₃ solution (20%) with a Pasteur pipette.
4. Affix the cap to the bottle.
5. Gently shake the bottle to uniformly distribute the preservative.
6. Uncap the bottle and check the sample with pH paper. If the pH is not ≤ 2 , repeat steps 4 - 7.
7. Dry the bottle with a paper towel.
8. Label the bottle immediately.
9. Collect field blank samples at the rate of 10% of the total number of samples collected per day. (A minimum of one field blank sample must be collected.)
10. Place the samples on ice as soon as possible and cool to 4° C (39° F).

4.4 BNA Sampling Procedures

1. Wear sample gloves.
2. Collect samples in the designated bottles. A triple volume sample must be collected at each location.
3. Allow room in the bottle for expansion. *Do not overfill the bottle.*
4. Affix the cap to the bottle.
5. Dry the bottle with a paper towel.
6. Label the bottle immediately.
7. Collect field blank samples at the rate of 10% of the total number of samples collected per day. (A minimum of one field blank sample must be collected.)
8. Place the samples on ice as soon as possible and cool to 4° C (39° F).

4.5 PCB/Pesticide Sampling Procedures

1. Wear sample gloves.
2. Collect samples in the designated bottles. A triple volume sample must be collected at each location.
3. Allow room in the bottle for expansion. *Do not overfill the bottle.*
4. Affix the cap to the bottle.
5. Dry the bottle with a paper towel.

6. Label the bottle immediately.
7. Collect field blank samples at the rate of 10% of the total number of samples collected per day. (A minimum of one field blank sample must be collected.)
8. Place the samples on ice as soon as possible and cool to 4° C (39° F).

4.6 Cyanide Sampling Procedures

1. Wear sample gloves.
2. Collect the sample in the designated bottles leaving enough room in the bottle for the addition of the preservative.
3. Preserve the sample to a pH ≥ 12 by slowly adding NaOH solution (50%) with a Pasteur pipette.
4. Affix the cap to the bottle.
5. Gently shake the container to uniformly distribute the preservative.
6. Uncap the bottle and check the sample with pH paper. If the pH is not ≥ 12 , repeat steps 4 - 7.
7. Recap the bottle and turn it upside down and strike the bottle sharply on the palm of the hand and observe for bubbles. Bubbles can not be present in the sample.
8. Dry the bottle with a paper towel.
9. Label the bottle immediately.
10. Collect field blank samples at the rate of 10% of the total number of samples collected per day. A minimum of one field blank sample must be collected.
11. Place the samples on ice as soon as possible and cool to 4° C (39° F).

Most sites require field blanks for Quality Assurance/Quality Control (QA/QC) purposes. At other sites, a higher level of QA/QC may be required and trip blanks or duplicates may be necessary.

REFERENCE

EPA. 1991. *Compendium of ERT Groundwater Sampling Procedures*. Office of Solid Waste and Emergency Response, Washington, DC. EPA/540/P-91/008.